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STREAMBED ALTERATION AGREEMENT MOU NO. 283-96

MEMORANDUM OF UNDERSTANDING

BETWEEN

THE CALIFORNIA DEPARTMENT OF FISH AND GAME (DEPARTMENT)

AND THE SANTA CLARA VALLEY WATER DISTRICT (DISTRICT)

FOR THE INSTALLATION AND OPERATION OF SPREADER DAMS

TO RECHARGE THE GROUNDWATER BASINS

WITHIN THE SANTA CLARA COUNTY WATERSHEDS

SUBJECT TO FISH AND GAME CODE SECTION 1601

This Memorandum of Understanding by and between the California Department of Fish and Game, hereinafter called the "Department", and Santa Clara Valley Water District, hereinafter called the "District", is for the purpose of delineating and defining the installation, operation, maintenance, and removal of spreader dams that shall not require further Notice and Agreement in compliance with the Fish and Game Code.

WHEREAS, the Department is charged with the protection and enhancement of the fish and wildlife resources of the State of California; and

WHEREAS, the protection of fish and wildlife resources depends largely upon the preservation of the quality and quantity of their respective habitats; and

WHEREAS, Fish and Game Code Section 1601 requires notification of Department whenever a project will result in alteration of the flow or bed, channel, or bank of any river, stream, or lake; and

WHEREAS, Fish and Game Code Section 1601 allows the Department to propose reasonable modifications to certain District construction projects as would allow for the protection and continuance of existing fish and wildlife resources that may be substantially adversely affected by that construction project; and

WHEREAS, consistent with the policies of Fish and Game Code Section 1600 et seq. the protection and conservation of the fish and wildlife resources of California are of utmost public interest, and fish and wildlife conservation is a proper responsibility of the State; and

WHEREAS, Fish and Game Code Section 1601 makes provisions for routine maintenance and operations following initial notification on specified projects; and

WHEREAS, it is essential that the Water District artificially recharge the groundwater basins, an essential component of the District's In-County Water Storage and Distribution System; and

WHEREAS, it is mutually beneficial to delineate and define routine operations, and to establish procedures to expedite operations activities, and to provide for the protection of fish and wildlife habitat during such operations activities; and

WHEREAS, nothing in this agreement shall constitute a waiver of any future or current Department claims to the use and maintenance of natural conditions under the public trust doctrine; and

WHEREAS, this MOU is not intended to affect the District's rights under Fish and Game Section 1601 (f) to undertake emergency work necessary to protect life or property.

NOW, THEREFORE, IT IS AGREED THAT:

Article 1(a). Routine activities such as installation, operation, maintenance, repair and removal of spreader dams shall be defined as those periodically scheduled and implemented activities necessary to recharge the groundwater basins by ponding water in waterway channels for which a notification of proposed streambed alteration (Form FG 2023) has been submitted and a valid streambed alteration agreement is or has been in effect for the express purpose of modifying or adapting those natural streams to provide water recharge capabilities.

Article 1(b). Activities which both parties agree may be considered "routine" are listed on Attachment A and are hereby made a part of this Memorandum of Understanding (MOU). The routine activities listed in Attachment A may be amended by mutual consent of the parties to this MOU.

Article 2. The District shall provide an annual written notification by March 15 to the Lieutenant Warden and the Unit Fishery Biologist for Santa Clara County describing the schedule for work tentatively proposed for that calendar year. Said schedule shall list the dams to be constructed and proposed installation dates.

The District shall provide to the Regional Manager, Region 3 of the Department, and the Unit Fishery Biologist and Lieutenant Warden, written notification of work completed per the following reporting schedule. Work is defined as the performance activities identified in this MOU. Due dates for submitting reports shall be as follows:

July 1 for activities during April 15 through June 15, with report to include copies of completed

"Summer Dam Installation" forms for each dam constructed and descriptions of dam breaching, dam repair and dewatering events.

November 30 for activities during June 16 through November 15, with report to include copies of completed "Summer Dam Removal" forms for each dam removed and descriptions of dam breaching, dam repair and dewatering events. Also, the report shall identify the locations and approximate amounts of stockpiled spreader dam material and describe the measures employed at each stockpile site to control erosion of stockpiled material.

Article 3. District shall provide written notification and fee payment by May 15 and November 15 of each year for (1.) all spreader dams constructed, reconstructed, placed in operation by use of dropboards, or removed; and (2.) all spreader dam impoundment basin excavation operations completed within the preceding period to the Regional Manager, Region 3 of the Department. A copy of the notification shall be concurrently provided to the Unit Fishery Biologist. The District shall pay to the Department a single fee for each spreader dam constructed, reconstructed, placed in operation by use of dropboards and removed and each spreader dam impoundment basin excavation operation. The fee shall be based on the Department's current fee schedule for work performed under a MOU.

Article 4. Work shall be performed at a time and in a manner which shall minimize adverse impacts to fish and wildlife resources and their habitat. In the event of conflict between conditions in the original streambed alteration agreement and the activities and conditions identified in this MOU, the MOU will govern. In this regard, the MOU is recognized as an equivalent streambed alteration agreement.

Article 5. The District shall be required to submit separate written notification pursuant to Code Section 1601 (Form FG 2023) together with the required fee prescribed in the streambed alteration agreement fee schedule and otherwise follow the normal notification process prior to the commencement of work activities in all cases where:

(a) the proposed work does not meet the criteria established for routine spreader dam activities in Article 1,

(b) the proposed work was not included in the annual notification required by Article 2,

(c) the nature of the proposed work is modified from that described in the initial notification and streambed alteration agreement issued for the project site,

(d) work will occur at a location where the Department advises the District that conditions affecting fish and wildlife resources on the site have changed or such resources would be adversely affected by the proposed activity, or,

(e) the proposed work will impact a State of California Species of Special Concern or

California (State) or federally listed rare, threatened, endangered, or candidate species or its Critical Habitat as designated pursuant to the U.S. Endangered Species Act.

Article 6. Should it be determined by the Department that a federally-listed threatened, endangered, or candidate species or its designated Critical Habitat is present at any of the proposed work sites, the Department shall immediately notify the District and the U.S. Fish and Wildlife Service (FWS). The Department shall withhold its approval for work at that site(s), and the District shall hold its proposed work in abeyance until the FWS has notified the District and the Department in writing that the endangered species concerns have been resolved and the proposed work may commence. If the FWS has conditioned its approval of the work, then any streambed alteration agreement issued by the Department pursuant to Article 5 shall also be so conditioned.

Article 7. The terms and conditions of the MOU may be amended at any time provided such amendments are agreed to in writing by both parties to this MOU. If the District gives notice to and obtains a Streambed Alteration Agreement from the Department to construct and operate additional spreader dams, in compliance with Fish and Game Code Section 1601, any such additional spreader dam sites shall be added to Attachment B by written amendment of this MOU, and all provisions of this MOU shall apply to subject additional sites.

Article 8. This MOU may be terminated by either party. Said termination shall become effective two (2) months after the party not initiating the termination has been duly notified in writing. Upon termination, the activities of the parties shall be governed by the applicable provisions of Fish and Game Code Section 1601.

Article 9. All written notifications herein provided to be given or which may be given by either party to the other, shall be deemed to have been fully given when made in writing and deposited in United States mail postage prepaid and addressed as follows:

To District at:
Chief of Operations
Operations Branch
Santa Clara Valley Water District
5750 Almaden Expressway
San Jose, CA 95118

To Department at:
Regional Manager
Department of Fish and Game
Region 3
P.O.Box 47
Yountville, CA 94599

Article 10. Remedies. Should disagreements arise between staff level personnel of the District and the Department concerning the implementation of this MOU which cannot be resolved by their respective management level supervisors, the issue will be elevated to the District administration and the Department Regional Manager for resolution. If resolution of this issue is not reached at this administrative level, the arbitration procedures specified in Section 1601 of the Fish and Game Code shall be initiated.

Article 11. Severability. In the event that the parties to this MOU have entered into discussions in an effort to resolve a disagreement pursuant to Article 10, activities necessary to carry out groundwater recharge may continue at approved sites provided that neither the sites nor the activities in use are the subject of the disputes.

Article 12. Consistency. If this MOU is found to be in conflict with other provisions of law, it shall be void unless amended to comply with all appropriate local, state, and federal laws.

Article. 13. Other Environmental Laws, Statutes, or Regulations. This MOU does not constitute any form of authorization, permit, biological opinion, or compliance with the requirements and provisions of any other statue, regulation, requirement, or ordinance respecting the protection or conservation of fish and wildlife resources. Those statutes include, but are not limited to, the California Environmental Quality Act, the California Endangered Species Act, or the Federal Endangered Species Act.

THIS MEMORANDUM OF UNDERSTANDING SHALL BE IN FULL FORCE AND EFFECT FROM MAY 1, 1996 PROVIDING THE PARTIES HAVE SIGNIFIED AGREEMENT BY SIGNATURE OF THE DESIGNATED REPRESENTATIVE.

Keith R. Anderson
Department of Fish and Game
Title: Senior Fisheries Biologist

Dated: May 9, 1996

Robert Howard
Santa Clara Valley Water District
Title: Deputy Manager O+M Group

Dated: May 20, 1996

ATTACHMENT "A"

THOSE ACTIVITIES WHICH MAY CONSTITUTE ROUTINE INSTALLATION, OPERATION, MAINTENANCE AND REMOVAL OF THE SPREADER DAMS IN THE SPREADER DAM PROGRAM

A. Spreader Dam Program Definitions

1. A spreader dam is defined as a temporary barrier made of river run aggregate (local or imported), wood, steel, or concrete materials constructed for the purpose of retaining water in waterway reaches where water is percolated for groundwater recharge. The sites listed in Attachment B attached hereto are the exclusive list of spreader dam sites defined in this MOU. Figure 2 within Attachment C shows the details of spreader dam construction with bypass pipes.

2. Recharge is defined as the movement of water via waterway systems from the surface to underground water bearing strata where it may be stored for future use.

B. Spreader Dam Installation, Operation, and Removal

1. Dams shall be constructed only during the period of April 15 through October 1. Dams may be repaired at any time during their authorized periods of operation under the same terms and conditions as construction.

2. Dams shall be removed by October 30 of each year except as identified in Attachment B (list of dams) and subsequent sections. Madrone Channel dams may remain in the channel all year.

3. Dams on Smith Creek shall be removed by October 30 of each year to restore channel capacity and morphology, and provide for free passage of fish through the dam site in a low-flow channel.

4. The dam on Guadalupe River at Alamitos Dropstructure may remain after October 30 of each year, but no later than November 15.

5. Dams on Lower Coyote Creek (Dams # 4,5, and 6) may remain after October 30 of each year if fish ladders, providing passage for adult chinook salmon and steelhead trout, are

operational by September 16 of each year. Additionally, the operator shall maintain a low-flow channel connecting to the downstream end of the fish ladder to facilitate good access to the fish ladder by upmigrant steelhead and salmon.

6. Aggregate dams shall be constructed, repaired and rebuilt of river-run material with less than 20% fines. Fines are the material that passes through the standard no. 20 sieve. Angular or crushed rock shall not be used. The gravel composition must be tested and certified for gradation within two months prior to use, and results provided to the Lieutenant Warden and the Unit Fishery Biologist prior to installation. Material testing for gradation shall be done in compliance with the Department of Transportation "California Test 202, July 1, 1982." Samples shall be randomly collected and shall be representative of the material that will be used in the spreader dam construction. Materials that are specifically manufactured for spreader dam construction shall have one gradation test performed for each 1,000 cubic yards manufactured. Materials that are used and stockpiled between operating seasons shall be randomly tested for gradation at a frequency of one gradation test performed for each 500 cubic yards of material, or one gradation test per stockpile where a dam will be constructed from a stockpile of less than 500 cubic yards volume, and if deficiencies are found, the District shall add and mix adequate material greater than the #20 sieve size to bring the stockpile into specifications. Both pre- and post-mixing gradation test results shall be provided to the Department at time of certification submittal. Gradation testing frequency for individual stockpiles of used material may be reduced to one gradation test for each 1,000 cubic yards of material whenever three consequtive testings at the 500 cubic yards frequency documents that material is less than 20% fines, and such testing at 1,000 cubic yards frequency continues to document acceptable composition of less than 20% fines. Special aggregate material defined in this Section is not required for the Madrone Channel dams.

7. During spreader dam construction, culverts equipped with a slide gate at the upstream end shall be placed in the low-flow channel at stream grade as shown in Attachment C, Figure 2, to bypass flows at all times to prevent dewatering downstream of the spreader dam site. Erosion control measures shall be implemented to minimize siltation and turbidity downstream of the dam site. Sediment from dam construction, removal and washouts shall be removed at the direction of the Department.

8. Spreader Dam construction, repair, and removal activities in the streambed and banks shall be restricted to within 50 feet upstream and 50 feet downstream of the spreader dam toe line on the streambed.

9. All spreader dams shall have an outlet to regulate discharge of water from the impoundment. Primary discharge shall be from the bottom of the spreader dam impoundment; with occasional spills through the overflow spillway culverts expected as an artifact of water delivery and water regulation operations. At dams with fish ladders, the fish ladders shall be blocked and water discharge shall be from the bottom of the dam impoundments for the period from June 1 through September 15 of each year.

10. Spreader dam construction and removal shall be performed at a time and in a manner consistent with the terms of this MOU which shall meet the District's obligations to recharge the groundwater basins. The District shall minimize impacts to fish and wildlife resources and their habitats by following the procedures in Attachment C. At time of dam removal, the integrity of the streambed and streambanks shall be restored, which includes restoration of the low-flow channel both upstream and downstream of the dam site.

11. During any dewatering operation, precautions shall be taken to prevent stranding of fishery resources, particularly juvenile salmonids, that utilize the impounded waters and/or stream reaches as rearing or resting habitat. These precautions shall include informing the Unit Fishery Biologist in advance of the operation, and having a crew and gear available to rescue and safely transport the stranded fish pursuant to a mutually agreeable fish rescue and transport protocol. Any dryback within a designated Dryback Zone in a tailwater reach below a lowermost spreader dam is not defined as a "dewatering event" for purpose of this MOU. Designated Dryback Zones are:

a. Coyote Creek Dam #6: Gauge 58 to Highway 101 bridge.
b. Smith Creek Dam #2: From dam to San Tomas Aquino Creek.
c. Guadalupe River Alamitos Dropstructure Dam: No Dryback Zone; District shall maintain a minimum flow of 1 cfs at Gauge 23B.
d. Madrone Channel Dam # 10: From dam to East Little Llagas Creek.

12. Water diversion from Lower Coyote Creek Spreader Dam #4 impoundment shall be screened to prevent diversion of fish in a manner acceptable to the Department. Fish screens shall be maintained and functional at all times during water diversion. Water diversion from Guadalupe River Alamitos Dropsturcture Spreader Dam impoundment also shall be screened upon addition of a fish ladder at the Alamitos dropstructure.

13. Should any of the spreader dams authorized by this MOU as shown on Attachment B be abandoned and deleted from the Spreader Dam Program, District shall restore the stream channel at subject dam site and impoundment basin to a natural channel morphology, including a defined meandering low-flow channel as approved by the Department.

14. District shall consult and obtain advance approval from the Unit Fishery Biologist for any deviation from the spreader dam installation, operation, maintenance and removal requirements described in this MOU necessitated by events of unusually high and/or unseasonal runoff.

15. District shall notify the Unit Fishery Biologist and Lieutenant Warden within 24 hours or the next working day about dam breaching and washout events, severe erosion of dam material caused by rain, loss of low-flow channel, dam repair activities, stream dewaterings associated with Spreader Dam activities, fish strandings and fish rescues, inoperable fishways and other significant aberrations from the normal procedures and conditions as described in this MOU.

16. When spreader dams with fish ladders are being operated for groundwater recharge, District shall maintain sufficient flow through the fish ladders to provide for adult and juvenile salmonid passage during the migration period of September 16 through May 31 of each year. District shall place fish ladders in operation prior to September 16 when notified by the Department that migratory salmonids are present and require free upstream passage. When subject spreader dam impoundments are drawn down or in the process of being drawn down during the migration season in anticipation of high flow events, District shall pass streamflow through the bypass pipes in a manner that provides acceptable conditions for unimpaired upstream and downstream passage of fish.

17. District shall make inspections of all fish ladders once every working day and at least once per day during high flow events on nonworking days during the migration season and shall remove debris, sediment and all obstacles when found to keep the ladders open at all times for unimpaired passage of fish.

18. If fish ladders are found to be deficient in providing satisfactory upstream or downstream fish passage due to aspects of fish ladder design and/or placement, District shall timely implement remedial design or placement measures as directed by the Department following consultation between Department and District.

19. District shall release a minimum of one (1) cubic foot per second from the bottom of spreader dam impoundments at all times to (a) maintain a continuous live stream in the reaches between spreader dams; and (b) provide surface flow in the downstream tailwater reaches below the lowermost spreader dams in all drainages except Smith Creek and Madrone Channel.

20. District shall delay spreader dam construction when the Chief of Operations of the Operations Branch is informed by the Department that proposed spreader dam construction or operation would substantially adversely impact (a.) salmon and/or steelhead redds, or (b.) juvenile salmon and/or steelhead downstream migration. Construction at subject site(s) shall commence only upon notification to proceed from the Department.

21. District shall expeditiously remove spreader dam(s) prior to the normal authorized removal date when the Chief of Operations of the Operations Branch is informed by the Department that continued operation of subject spreader dam(s) would substantially adversely impact salmon and/or steelhead upstream migration.

22. Prior to construction or removal of spreader dams on sites with habitat that may support California red-legged frog, District shall conduct pre-construction surveys of the construction areas, including access routes. Such surveys shall be conducted by a qualified biologist who shall advise the supervisor of the construction or removal operation on placement or removal of spreader dam materials. If any red-legged frogs are found in areas where they may

be harmed by the construction or removal operations, District shall immediately halt the activity and immediately notify the Unit Fishery Biologist and implement the requrements of MOU Article 6.

23. During spreader dam impoundment dewaterings, District shall release impounded water slowly to reduce the potential for California red-legged frogs to be swept downstream into areas of unsuitable habitat. The rate of water release at each dam shall be determined and supervised by a qualified biologist. If any red-legged frogs are found during dewatering activities, District shall immediately halt the activity and immediately notify the Unit Fishery Biologist and implement the requirements of MOU Article 6.

24. District shall conduct pre-construction surveys for nesting raptors prior to spreader dam installlation. Such surveys shall be conducted by a qualified wildlife biologist who shall determine the extent of construction-free zones around active raptor nests located during surveys. District shall notify the Unit Fishery Biologist prior to dam installation of any active raptor nest that may be potentially affected by dam construction and delineate the proposed construction-free zone for each such active rator nest.

25. Spreader dam impoundment basin excavation and maintenance operations at all dam sites on Coyote Creek shall only be conducted between June 1 and October 1 of each year. During any such operation and during the initial refilling of the impoundment basin, District shall maintain a minimum flow of one (1) cfs through the work area by temporary culvert or other acceptable means to maintain a live stream below subject dam. Following basin excavation and maintenance operations, increased water releases downstream can recommence at a flow rate that shall not scour out excessive amounts of bottom sediments. Turbidity downstream of the ponds shall not be allowed to increase when flow recommences beyond some initial silt that may have settled around the inlet to the slide gate. If significant increased downstream turbidity measured as more than 50 NTU is measured, then additional pond settling time shall be allowed to reduce sediment scouring and downstream turbidity. District shall monitor turbidity within 200 feet downstream of the pond(s) twice a day, in the morning and in the mid-afternoon, for seven days following the commencement of water releases after excavation and maintenance operations. District shall prepare and submit to the Unit Fishery Biologist by November 1 of each year a report summarizing the excavation operations, method and procedure for providing the 1 cfs minimum bypass flow, filling of the ponds, measurements of turbidity downstream and any changes to downstream release(s) undertaken to reduce downstream turbidity.

26. Spreader Dam impoundment basin excavation and maintenance operations at all dam sites on the Madrone Channel shall be conducted only during periods of no inflow. Any water releases from Madrone Channel Dam #10 shall not cause turbidity of receiving water to increase greater than ten (10) percent of background level, background level being the turbidity of receiving water immediately above the Madrone Channel discharge confluence.

27. District shall submit each Corps of Engineers calendar year annual monitoring report to the Unit Fishery Biologist no later than April 1 of the following year, provided such reports are required by the Corps of Engineers.

28. To protect, preserve and restore the fishery and aquatic resources of Santa Clara County streams, the District intends to prepare and implement a Comprehensive Fisheries Management Plan for Santa Clara County Streams. The initial plan will be prepared for the Guadalupe River System, waterways presently impacted by the Spreader Dam Program and water diversion dams.

ATTACHMENT B

Facility (Creek/Dam No.*, Location)	Must be removed by October 30	Fish Ladders required if Dams in Place After October 30	Must be removed by November 15
Guadalupe River			
***#1 At Alamitos Dropstructure			X****
Smith Creek			
#1 Elam Avenue	X		
#2 San Tomas Aquino Road	X		
Lower Coyote Creek			
**#4 2500 feet U/S of Ford Road		X	
#5 1100 feet U/S of Ford Road		X	
#6 900 feet U/S of Ford Road		X	
Madrone Channel	MAY REMAIN IN CHANNEL ALL YEAR SPECIAL MATERIALS NOT REQUIRED		
#1 30 feet D/S of Half			
#2 600 feet D/S of Half			
#3 Main Avenue			
#4 450 feet D/S of Dianna			
#5 Dunne			
#6 750 feet D/S of Dunne			
#7 San Pedro Avenue			
#8 Barrett Avenue			
#9 Tennant Avenue			
#10 Fisher Avenue			

* Dams numbered from upstream to downstream, missing numbers are inactive sites

** Fish Screens required in 1996

*** Fish screens required upon addition of fish ladder at Alamitos Dropstructure

**** New removal dates to be negotiated following addition of fish ladder at Alamitos Dropstructure

ATTACHMENT C

INSTALLATION AND REMOVAL OF SUMMER DAMS

This procedure provides guidelines for the installation and removal of summer dams.

Installation:

1. Annually between March 15 and April 14, a pre-construction meeting with the District and Department of Fish and Game personnel will be held to visit proposed dam sites, and to identify and resolve site specific concerns.

2. Reduce water releases, if any, bypassing a flow greater than or equal to one cubic foot per second (cfs) past the dam site, in order to maintain a live, continuous flowing stream.

3. When more than one dam is to be constructed on the same stream, installation will be in accordance with the prescribed schedule submitted to the Department of Fish and Game.

4. The bypass pipe (equipped with a slide gate at the upstream end of the pipe) should be placed in the naturally-occurring low-flow channel. If necessary, prepare the channel bottom to receive the bypass pipe using a low ground-pressure bulldozer. On some streams, the low-flow channel is situated along the bank opposite from where access to the site exists. It may be necessary to partially construct a portion of the dam embankment. This will enable equipment to reach the low-flow channel for placement of the bypass pipe.

5. With the bypass pipe in place and the slide gate in the fully-open position, place suitable dam material (20% or less fine content) at the upstream end of the bypass pipe, completely blocking the low-flow channel. In this manner, the "live" stream can be bypassed entirely through the pipe.

6. Place and compact material around the rest of bypass pipe leaving both ends exposed. Continue construction of the dam embankment using suitable material that meets the 20% fine content criteria. Place the material in one-foot lifts and track-walk to achieve desired compaction. When the dam construction reaches the design impound elevation, prepare the dam embankment to receive the overflow pipes.

7. Place the overflow pipes in the dam. The invert of the pipes at the upstream end must be at the design impound elevation. The downstream end of the pipes must outlet into the naturally-occurring low-flow channel. Place additional material to achieve the design height of the dam. One foot of cover should be placed on the overflow pipes.

8. With the bulldozer, excavate a 6-12 inch deep "V-notch", 3-5 feet wide in the top of the dam. The notch should be located away from the overflow pipes and bypass pipe, but no closer to the top of bank than a point directly above the former toe of bank. In this manner, if the dam were to be overtopped because of vandalism to it or other dams in the creek, the overflow pipes and bypass pipe would not wash out.

9. Construct a wooden catwalk from the top of the dam to the slide gate stem and handwheel.

10. Impoundment of water behind the dam or the most upstream dam in a series can begin immediately upon completion of steps 1-8. This is accomplished by increasing water releases and

by gradually closing the slide gate. At all times during the impoundment process, a live, continuous flowing stream must pass through the dam site. At the point that impounded water begins to flow through the overflow pipes, water releases should be reduced as follows:

a. If additional dams are to be constructed downstream of the dam being regulated, sufficient flows should pass through the dam such that a live continuous stream exists at the next downstream dam construction site. Installation of this and each succeeding dam should follow steps 1-9..

b. If the dam is the only dam on the stream, or the last dam in a series, flows are to be reduced to normal operating levels. Typically, the minimum bypass flows will vary from site to site. Sufficient flow is released so that a live stream is maintained to the downstream limit of effective recharge area.

11. Special care should be exercised at all times by all personnel not to disturb established riparian vegetation outside the prescribed area limits for dam construction.

12. The final schedule of dam installations will be provided to the local DFG biologist one week prior to beginning construction so that he/she can monitor installation work.

13. If streams are impacted beyond expected levels and a DFG representative is not present, District personnel will notify the Department immediately so that the impacts/problems can be remedied. These impacts may include, but are not limited to, the following:

    1. Unplanned breaches and washouts.

    2. Riparian vegetation being disturbed either through equipment use or by stockpiling dam material too close to vegetation and/or up the trunks of trees.

    3. Loss of low-flow channel, resulting in wide, shallow channel.

    4. Severe erosion of dam material caused by rain, culvert placement, etc...

    5. Loss of water in the impoundment and/or in the stream channel.

Removal:

1. Reduce water releases to dewater dam sites. Concurrently, open the bypass slide gates such that a live continuous stream is maintained between the dams and a flow of at least one cfs bypasses the most downstream dam. The continuous stream shall also be maintained below the most downstream site, thus percolation rates must be accounted for.

2. Allow dam materials to dry out enough to support equipment to be used for removal. Overflow pipes and catwalks can be removed at this time.

3. Remove dam material using a hydraulic excavator. At dam sites without sufficient "swing room" to operate the excavator, it will be necessary to push the dam material to the top of bank using a bulldozer. Continue to remove dam material in this manner until the bypass pipe is exposed and removed and the channel has been restored to roughly, pre-construction contours. Generally,

this is accomplished by conforming to the channel cross-sections on both the upstream and downstream edges of the dam embankment. The channel restoration includes restoring the low-flow channel to its natural meander and gradient downstream, through, and upstream of the dam site.

4. If the stockpiled dam material has the potential of re-entering the creek, erosion and sediment control measures will be implemented. Erosion and sediment control measures and material handling and storage practices shall follow the construction related best management practices of the Santa Clara Valley Nonpoint Source pollution and control program.

5. Resume normal water releases where applicable.

6. Annually, a post removal meeting with the District and Department of Fish and Game personnel will be held to visit the dam sites and material stockpiles. At that time, site- specific concerns will be identified and resolved.

SUMMER DAM INSTALLATION

Stream: ____________________ Maintenance Supervisor: ________________

Dam No.: ____________________ Observer(s): ____________________

Dam Location: ________________ Date: ________________________

1. Existing conditions:

   a. Low Flow Channel (LFC) Yes ____ No ____

   b. LFC near access to dam Yes ____ No ____

   c. Water releases reduced Yes ____ No ____

   d. Approximate flow ______ cfs

   e. Maximum permissible flow per Operations Procedure ______ cfs

   f. Additional Comments: ____

   ____

   ____

2. Installation of this dam is in accordance with the perscribed schedule Yes ____ No ____

3. Partial dam construction needed to reach LFC Yes ____ No ____

4. Bypass pipe has been placed in the naturally-occurring LFC and is diverting flow past the dam site Yes ____ No ____

5. Fines content of dam material: ______ percent

6. Downstream end of overflow pipe(s) outlet(s) into the naturally-occurring LFC Yes ____ No ____

7. V-notch has been excavated Yes ____ No ____

8. A live, continuous stream has been maintained during and after construction has been completed Yes ____ No ____

9. Maintenance Supervisor has notified Raw Water Operations Division that dam has been completed Yes ____ No ____

10. Describe:

    a. Problems encountered: ____

    ____

    b. People notified: ____

    c. Corrective actions: ____

    ____

Maintenance Supervisor Initials______________

SUMMER DAM REMOVAL

Stream: ______________________ Maintenance Supervisor: ________________

Dam No.: ______________________ Observer(s): ________________________

Dam Location: _________________ Date: ______________________________

1. Existing conditions:
   - a. Low Flow Channel (LFC) exists U/S and D/S of dam Yes ____ No ____
   - b. Area for stockpiling material is available near dam site Yes ____ No ____
   - c. Water releases reduced and impounded water drawn down Yes ____ No ____
   - d. Approximate flow ______ cfs
   - e. Maximum permissible flow per Operations Procedure ______ cfs
   - f. Additional Comments: ____

     ____

     ____

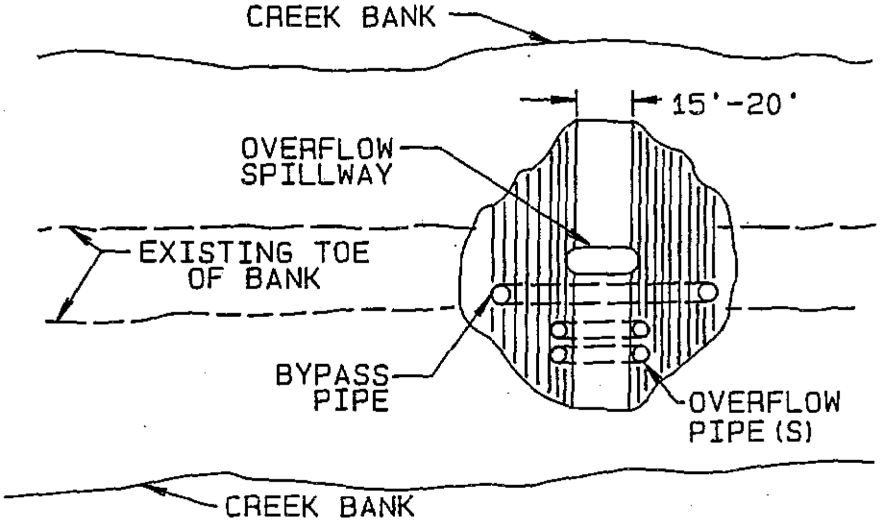
2. Removal of all dams, if any, downstream of this location has been completed Yes ____ No ____
3. Overflow pipes have been removed Yes ____ No ____
4. Dam material was removed using an excavator Yes ____ No ____
5. Bypass pipes have been removed Yes ____ No ____
6. Low flow channel has been restored to its natural meander and gradient Yes ____ No ____
7. Sediment control measures in place for dam material stockpiled near stream Yes ____ No ____
8. A minimum flow of one cfs bypassed dam site during removal process Yes ____ No ____
9. Maintenance Supervisor has notified Raw Water Operations Division that dam has been removed Yes ____ No ____
10. Any fish observed Yes ____ No ____
11. Describe:
    - a. Problems encountered: ____

      ____
    - b. People notified: ____
    - c. Corrective actions: ____

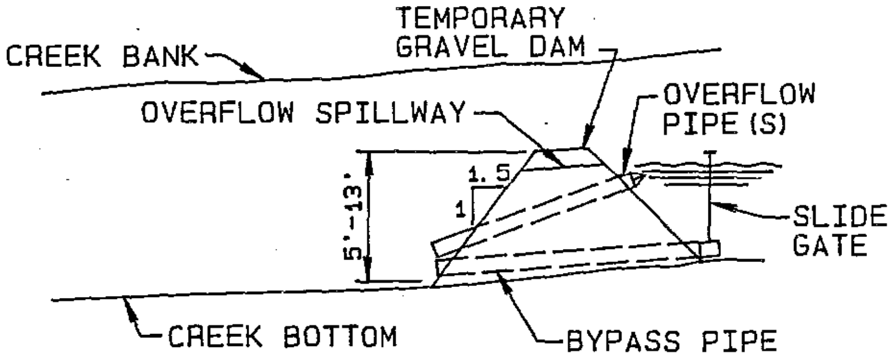
      ____

Maintenance Supervisor Initials ____________

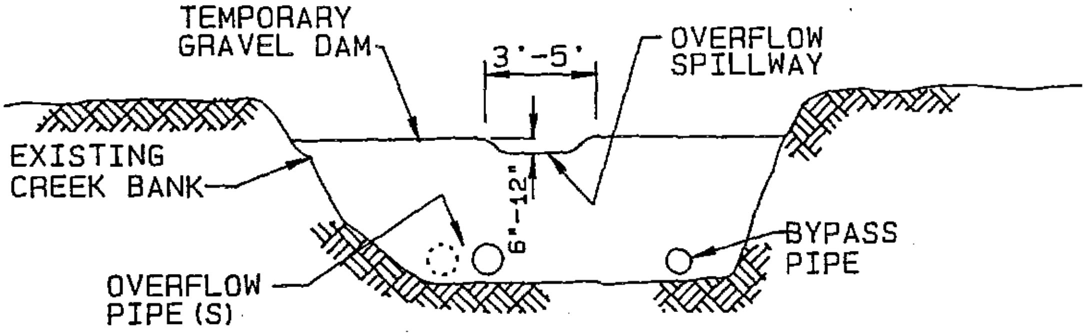
FIGURE 2



PLAN
N. T. S.



PROFILE THROUGH DAM
N. T. S.



ELEVATION
LOOKING UPSTREAM
N. T. S.

SPREADER DAMS FOR RECHARGE
IN SANTA CLARA COUNTY